CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1.   A method of identifying endmember spectra values from multispectral image data, where each multispectral data value is equal to a sum of mixing proportions of each endmember spectrum, said method including the steps of:

processing the data to obtain a multidimensional simplex having a number of vertices equal to the number of endmembers, the position of each vertex representing a spectrum of one of the endmembers,

wherein processing the data includes:

providing starting estimates of each endmember spectrum for each image data value;

estimating the mixing proportions for each data value from estimates of the spectra of all the endmembers;

estimating the spectrum of each endmember from estimates of the mixing proportions of the spectra of all the endmembers for each image data value;

repeating estimation steps until a relative change in the regularised residual sum of squares is sufficiently small, the regularised residual sum of squares including a term which is a measure of the size of the simplex.

2.   A method according to claim 1, wherein the term used in the regularised residual sum of squares is the sum of the squared distances between all of the simplex vertices.

3.   A method according to claim 1, wherein the step of providing the starting estimates includes choosing starting points with a high pixel purity index score.

4.   A method according to claim 1, wherein more preferably the starting estimates are well separated.

5.   A method according to claim 1, wherein the relative change in the regularised residual sum of the squares is regarded as sufficiently small when the ratio of successive values of regularised residual sum of squares is less than a tolerance.

6.   A method according to claim 1, wherein the tolerance is 0.99999.

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7.   A method according to claim 1, wherein processing the data includes whitening the data.

8.   A method according to claim 7, wherein whitening the data includes conducting a transform of the data into data that is not band correlated.

9.   A method according to claim 1, wherein processing the data includes removing bands that do not have a high signal to noise ratio.

10.   A method according to claim 1, wherein the step of estimating the spectrum of each endmember is conducted using a linear estimation technique.

11.   A method according to claim 1, wherein the step of estimating the mixing proportions is conducted using a quadratic programming minimisation technique.